

# XIII.

## National Institute on Drug Abuse

---

### INTRODUCTION

It is the mission of the National Institute on Drug Abuse (NIDA) to lead the Nation in bringing the power of science to bear on drug abuse and addiction. The two critical components of this charge are (1) the strategic support and conduct of research across a broad range of disciplines and (2) the rapid and effective dissemination and application of the results of that research to significantly improve prevention, treatment, and policy in relation to drug abuse and addiction.

The international program implements the NIDA mission through coordination with international and foreign regional organizations, with other agencies of the U.S. Government, and with nongovernmental organizations involved in research on drug abuse and related health consequences in other countries. Through the International Visiting Scientists and Technical Exchange (INVEST) Program, NIDA fosters international research collaboration through technical consultation, scientific exchange, information dissemination, international communications networks, and research fellowships.

### HIGHLIGHTS OF RECENT SCIENTIFIC ADVANCES RESULTING FROM INTERNATIONAL ACTIVITIES

#### China

##### Physiological Bases of Acupuncture Analgesia

Researchers from Beijing Medical University continued to report their findings about the physiological bases of acupuncture analgesia. The principal investigator has found that the 6 opioid agonist U50488H suppressed calcium currents in the dorsal root ganglion. This effect was almost completely reversed by the antiopioid peptide orphanin FQ. In a related study, nocistatin blocked the antagonism of morphine analgesia produced by orphanin FQ in the rat. These studies con-

tribute to better understanding of the function of orphanin FQ in pain processing. The investigator also compared rats that were very responsive to electroacupuncture with rats for which this procedure did not produce analgesia. The rats that did not show analgesia after electroacupuncture had higher levels of cholecystokinin 8 in the spinal cord. This finding suggests that spinal levels of cholecystokinin may be inversely related to the response of rats to electroacupuncture. In a further series of studies, the investigator examined the levels of electroacupuncture that induce the release of somatostatin and calcitonin, two gene-related neuropeptides involved in pain processing.

#### Spain Fundamental Mechanisms of Dopamine Neurotransmission

Amphetamines can dramatically stimulate locomotor activity by increasing dopamine release and by inhibiting its reuptake. Scientists at Columbia University, New York City, New York, in collaboration with colleagues from Genentech, South San Francisco, the University of California, San Francisco, and Stanford University, California, and Universidad de Valencia produced genetically altered mice lacking the  $\alpha$ -synuclein protein and studied the response of the knockout mice to amphetamine. The mutant mice displayed a decreased locomotor response to amphetamines. In addition, the mutant mice had reduced levels of total striatal dopamine, and the neurons exhibited increased dopamine release in response to paired electric stimuli. The scientists concluded that  $\alpha$ -synuclein is an essential, presynaptic, activity-dependent, negative regulator of dopamine neurotransmission. They attributed the attenuated response to amphetamine to either the altered pattern of dopamine neurotransmission or the reduced dopamine content. This finding is significant for basic neurobiology and for under-

standing of the relationship between  $\alpha$ -synuclein and the etiology of Parkinson's disease and Alzheimer's disease. The research team published its results in *Neuron* (January 2000).

#### Sweden Role of Genes in Risk for Tobacco Use Among Women

A generation-spanning study of twins has confirmed that genes and environment each play a key role in determining a person's vulnerability to regular tobacco use. The study was conducted by NIDA grantees at the Medical College of Virginia, Richmond, and researchers at Karolinska Institute, Stockholm. For women, the genetic element of their vulnerability to smoking has increased as society's once-strong taboos against tobacco use by women have diminished. Among men, the patterns of tobacco use suggest that genetic and environmental factors account for 61% and 20%, respectively, of the differences in individual risk for becoming a regular user of tobacco. In women born before 1925, rates of tobacco use were low and were based largely on environmental factors. For women born since 1940, heritability of tobacco use is essentially the same as for men (63%). The study results were published in the *Archives of General Psychiatry* (September 2000).

### SUMMARY OF INTERNATIONAL PROGRAMS AND ACTIVITIES Country-to-Country Activities and Bilateral Agreements

#### Canada

NIDA-supported researchers at the University of Toronto, Ontario, found that methoxsalen, a compound used to treat skin disorders, reduced the activity of the CYP2A6 enzyme that metabolizes nicotine. The medication significantly improved the effectiveness of oral nicotine replacement in reducing a smoker's urge for nicotine. The drug

also increased the interval between cigarettes and reduced the number and length of puffs taken from each cigarette. CYP2A6 inhibition could reduce smokers' exposure to the harmful constituents of tobacco smoke, while serving as part of a step-by-step program of reduction leading to cessation of smoking.

A NIDA grantee at the Center for Addiction and Mental Health, Toronto, and colleagues at the Office of the Armed Forces Medical Examiner, Washington, D.C., reported in the journal *Neurology* (July 2000) on a neurochemical analysis at autopsy of the brain of a 26-year-old man with a 9-year history of acute and chronic use of the recreational drug 3,4-methylenedioxymethamphetamine (ecstasy). The purpose of the study was to determine the neurotoxic effects of ecstasy. The brain was examined and neuropathically compared with brains of neurologically healthy subjects. Histopathological analysis disclosed no dopamine-related abnormalities in the brains of the control subjects or the ecstasy user. The lack of change in nigral cellularity and in the dopaminergic markers (e.g., striatal levels of dopamine, the dopamine transporter, and the vesicular monoamine transporter) may explain the previously reported lack of antiparkinsonian response to dopaminergic therapy in ecstasy users. In contrast, striatal levels of serotonin and its metabolite 5-hydroxyindoleacetic acid were 71%–80% lower than levels in the healthy subjects. Part of this reduction could result from toxic damage to striatal serotonin nerve terminals, acute reversible depletion of neurotransmitter stores, or both. This study is the first to demonstrate that recreational use of ecstasy can cause depletion of tissue stores of serotonin, which may account for some of the behavioral effects during drug taking and withdrawal, but it does not cause significant changes in striatal dopamine.

A study on Prenatal Cannabis (marijuana) and Cigarette Exposure, with Carleton University, Ottawa, Ontario, continues to examine long-term health and development outcomes in a study of children who are now in late adolescence and early adulthood. This is one of only two cohort studies of prenatal marijuana exposure in the United States and Canada. These children have been assessed at various ages since birth, enabling examination of developmental

pathways and the predictive value of measures taken during infancy and early childhood. In addition, examination of initiation and patterns of drug use is included in the analyses.

Measurements were made annually during the 1st 6 years of life, once in 9- to 12-year-olds, and once again in 13- to 15-year-olds. Participants are now 16–20 years of age. Throughout the study, multiple assessments have been used to investigate neurocognitive, perceptual, language, and behavioral outcomes. Growth has also been assessed, and use of marijuana has been studied during adolescence and young adulthood.

One preliminary finding is that maternal use of marijuana during pregnancy is associated with markedly different outcomes in children 9–12 years of age than is maternal use of tobacco during pregnancy. For children born to women who smoked cigarettes during pregnancy, the major deficits were observed in (1) tasks involving visuospatial skills (e.g., basic aspects of visual discrimination, visual memory, and visual-spatial relationships) and (2) tasks that do not require a high degree of integrative and analytic skills. In contrast, for the children prenatally exposed to marijuana, vulnerable areas of performance involved skills in planning, integration, analysis, and synthesis, in addition to basic visuospatial abilities. The research team interprets the findings on marijuana in terms of the cognitive construct of executive function, which is associated with frontal cortical function.

Under a grant to the University of British Columbia, Vancouver, investigators are studying groups of adult injection drug users in Vancouver and Montreal, Quebec, to detect trends in the seroincidence of human immunodeficiency virus (HIV) and to identify and explain why accessibility to clean needles alone is not sufficient to halt HIV infection rates among injection drug users. Of particular interest is the impact on injection drug users of the type of drug, pattern of drug use, attitudes on HIV incidence, and the social climates in the region and among the drug users' networks of associates. HIV seropositive participants in the study are offered extensive pretest and post-test counseling and referrals for free medical and psychosocial care. In fiscal year 2000 (FY 00), analytic findings indicated that aboriginal

people, a significant minority in Canada, were 1.6 times more likely than other drug injectors to become HIV positive. This result reflects the predilection of HIV to select disadvantaged and minority populations in different countries and settings. Data also indicate that the positivity rate for hepatitis C virus (HCV) is approximately 90% in the drug-injecting population. Compared with HCV-negative injection drug users, HCV-positive injection drug users were 4.8 times more likely to be infected with HIV, 3.4 times more likely to have a history of incarceration, and 1.9 times more likely to have been treated with methadone for drug addiction.

### **China**

NIDA is cofunding a project in Guangxi Province. A researcher at Johns Hopkins University, Baltimore, Maryland, directs the study in collaboration with Guangxi Health and Anti-Epidemic Center and the Chinese Academy of Preventive Medicine. This study, in its 1st year in FY 00, will document both prevalence and incidence of HIV infection and associated risk factors for infection among drug users. The researchers will also document the prevalence and distribution of different subtypes of the HIV virus, determine the virus subtypes in newly infected drug users, and compare the transmissibility of the subtypes in injection drug users and their sexual partners. The study will also track changes in risk profiles and viral subtypes over time.

### **Colombia**

A prospective longitudinal study of Colombian youth who were adolescents at study entry and their parents was in its 5th year in FY 00. Researchers at Mt. Sinai School of Medicine, New York City, New York, and Universidad de Antioquia, Medellín, are examining the causes of patterns and changes in adolescent drug use and other problem behaviors, as well as the consequences of drug use on the individual and the family. Published findings of this study support a theory of family interaction (*Journal of the American Academy of Child and Adolescent Psychiatry*, 1998). Factors related to family traits, adolescent personality, and peer factors had a direct effect on adolescents' marijuana use. The researchers observed gender-specific differences in the influence of the

cultural and ecological domain on drug use. Among adolescent boys, the effects of this domain were indirect; they were mediated by family, peer, and personality factors. Among adolescent girls, the effects were both direct and indirect. The developmental path leading to drug use among Colombian adolescents does not appear to differ markedly from the path that has been found among white, African-American, and Puerto Rican adolescents living in the United States. Nevertheless, marked cultural differences were reflected in gender-specific differences in the pathways to marijuana use. Both familism and religion, two important cultural values, were more likely to protect the adolescent from drug use in Colombia than in the United States.

Another report from this team of researchers indicates that sensation seeking and tolerance of deviant behavior were similarly related to both delinquency and marijuana use (*Archives of Pediatrics and Adolescent Medicine*, 1999). This finding suggests that a common cause underlies the propensity to engage in different deviant behaviors. When violence was endemic and illicit drugs were readily available, a close parent-child bond was capable of mitigating these risk factors, leading to less marijuana use and delinquency.

#### **Finland**

To test the hypothesis that high daily cigarette consumption and addiction to smoking are risk factors for the long-term continuation of smoking, a team of researchers from Harvard University, Boston, Massachusetts, the University of Rochester, New York, and the University of Jyväskylä used longitudinal data from 986 male smokers participating in the Normative Aging Study. They entered data on the number of cigarettes smoked per day, psychological addiction, age, and education into a survival analysis, as predictors of continued smoking over a 25-year period. Findings indicate that men aged 22–38 years and those who smoked more than 26 cigarettes per day were more likely to remain smokers in the long term. Addiction and education level were not significant predictors of continued smoking. Publishing in the *American Journal of Public Health* (March 2000), the researchers concluded that heavier smokers are more at risk than lighter smokers for

long-term smoking and that it is therefore very important to provide smoking cessation treatments for heavy smokers as early as possible after they start smoking.

#### **France**

NIDA funds a research grant to the French National Institutes of Health and Research (INSERM) on the synthesis and evaluation of D3 dopamine receptor ligands as possible treatment agents for cocaine abuse. One of these ligands, BP 897, is a partial and selective D3 dopamine agonist that reduces cocaine-seeking behavior in rats but does not increase seeking behaviors to obtain the agent itself. These findings suggest that the agent probably will not have abuse potential. The investigators are performing advanced preclinical evaluation to assess the efficacy of this ligand as a potential agent for the prevention of craving and relapse to cocaine abuse.

#### **Russia**

In FY 99, NIDA awarded an administrative supplement to the University of Pennsylvania Treatment Research Center, Philadelphia, to work with Russian psychiatrists at Pavlov State Medical University, St. Petersburg. The aim of the study is to assess the efficacy of naltrexone and sertraline, alone or in combination, plus manual-guided psychosocial treatment, to prevent relapse in heroin addicts receiving drug treatment after detoxification at a St. Petersburg medical facility where agonist pharmacotherapy is not available. Preliminary results on data collected between July and December 2000 show good compliance. Patients kept 81.6% of all appointments for follow-up, which were scheduled twice a month, and 76.3% took the prescribed medication regularly, as documented by self-report and a riboflavin urine control. Follow-up periods for these preliminary data were 1–6 months and will extend to 12 months. According to self-report, urine drug testing, and information from relatives, 8 of the 19 patients in the naltrexone group had an episode of taking heroin; five of these remained abstinent after a single episode, two had relapse, and one was dropped from the study because of hospitalization. In the placebo group, 16 of 19 patients had an episode of taking heroin, and 9 of these had relapse. These preliminary data provide a rationale for further

studies on the use of naltrexone to treat heroin addiction. Russians addicted to heroin who participated in this study were more likely than their U.S. counterparts to comply with the naltrexone treatment protocol. The investigators attributed this finding to cultural differences, age, and living situations.

A supplement awarded to Beth Israel Medical Center, New York City, New York, in the summer of 2000, for the National Study of Syringe Exchange Programs, will be used to analyze data from a Russian syringe exchange program in five cities: Nizhni Novgorod, Pskov, Rostov-on-Don, St. Petersburg, and Volgograd. The purpose of the supplement is to extend the basic research question of the parent grant—the effectiveness of HIV prevention programs for injection drug users in different communities—from a U.S. national level to an international level. This project will be accomplished through three steps: (1) comparative analyses of U.S. and Russian syringe exchange programs, (2) comparative analyses of data from the second round of the World Health Organization (WHO) Multi-site Study of AIDS (acquired immunodeficiency syndrome) and Drug Use, and (3) special follow-up data collection at selected WHO study sites. HIV has spread among injection drug users in 114 countries in the world and is spreading very rapidly in many other areas. In FY 00, incidence rates were 20 per 100 person-years at risk or higher. Comparative studies of different HIV prevention programs in different communities are needed to develop a community-level understanding of successful and unsuccessful HIV prevention.

#### **Sweden**

The study entitled Opiate, Sedative, and Stimulant Use and Abuse in a Population-based Sample of Female Twins was published in *Acta Psychiatrica Scandinavica* (1999). The article reports findings on the relative roles of environmental and genetic factors in the risks for use of, abuse of, and dependence on hallucinogens, opiates, sedatives, and stimulants. Previous reports have examined factors related to use and abuse of marijuana and cocaine. Together, the results suggest that both genetic and familial factors contributed to resemblances between twins for the more common patterns of hallucinogen and stimulant use, whereas resemblances for the less common use of opiates and seda-

tives, as well as for stimulant abuse and dependence, were solely the result of genetic factors. These findings confirm the strong influence of family factors, including genetic factors, in the vulnerability to illicit substance use and abuse in women.

### **Thailand**

For the 2<sup>nd</sup> year, in FY 00, NIDA is cofunding a project based in Chiang Mai, northern Thailand. The study is directed by researchers at Johns Hopkins University, Baltimore, in collaboration with Chiang Mai University and the Northern Drug Dependence Treatment Center of the Thai Ministry of Public Health. The researchers are investigating the epidemiology of HIV infection among users of opiates, amphetamines, or both. The project is exploring risk factors for HIV infection, and one purpose is to ascertain the contribution of risk factors, such as injection practices, sexual behaviors, and history of sexually transmitted diseases, to acquisition of infection. The researchers will also assess the prevalence and impact of other conditions, such as tuberculosis and hepatitis, in persons with HIV infection. HIV viral subtypes circulating among users of opiates, amphetamines, or both will also be characterized. Analysis of data from the only inpatient drug treatment program in northern Thailand demonstrated high rates of new HIV infection. The highest rates were among injection opiate users, and more recent data indicate a growing problem for amphetamine users in this area.

Another project funded by NIDA in Thailand is investigating hepatitis C among various populations, including drug users, sex workers, patients with sexually transmitted diseases, and military recruits. The project, which was in its 1<sup>st</sup> year of funding in FY 00, is directed by scientists at Johns Hopkins University, Baltimore, in collaboration with Chiang Mai University. The research will address the epidemiology and transmission of HCV, as well as the virology and natural history of the disease in persons with or without HIV infection.

### **United Kingdom**

NIDA's Division of Treatment, Research, and Development continues to collaborate with Reckitt Benckiser, Inc., Bristol, England, on the development of buprenorphine as a

treatment for opiate dependence. The research is conducted under a Cooperative Research and Development Agreement between NIDA and the pharmaceutical company, which has been in place since September 1993. This joint effort resulted in the development of two products. The first is a sublingual tablet containing buprenorphine alone; the second is a sublingual tablet containing buprenorphine combined with naloxone to reduce potential diversion to illicit street sales. The company has filed New Drug Applications for both products, and the U.S. Food and Drug Administration has determined that each product is "Approvable." Buprenorphine is approved for the treatment of opiate dependence in 26 countries and is under review in three others. The clinical pharmacology studies and multisite clinical trials supported by NIDA are critical to the successful approval of these medications.

NIDA is funding a project directed by investigators at the University of Edinburgh, Scotland, in collaboration with Dana-Farber Cancer Institute, Boston, Massachusetts. The investigators are exploring drug- and HIV-related neuropathology and apolipoprotein E polymorphisms in a clinically well-characterized cohort of drug users in Edinburgh, who have a high prevalence of injection drug use and of HIV infection. Their lifetime drug history and premorbid and comorbid neuropsychological and general health status is well documented. Despite early identification of the HIV epidemic in this group and a program of methadone substitution, the mortality rate has been high, both from drug-related causes and from associated HIV and hepatitis C infections. The study includes patients with pure HIV encephalitis who did or did not use drugs, drug users who were HIV negative, and control subjects who were HIV-negative and did not use drugs.

### **Multicountry Projects**

International trends in inpatient psychiatric care and length of hospital stay, in Australia, the Netherlands, Switzerland, and the United States, were examined from 1980 to 1995, by using data from the Organization for Economic Cooperation and Development. The findings were reported in the journal *Psychiatric Services* (March 2000). Psychiatric care as a proportion of total inpatient ex-

penditures had a strong downward trend. The average length of hospital stay for mental health and substance abuse disorders increased slightly in Australia and Switzerland, while it decreased slightly in the Netherlands and the United States. The international phenomenon of decreasing inpatient expenditures for psychiatric disorders may result from treatment advances such as medications that reduce the need for inpatient care.

A supplement awarded in September 1999 to the National Development Research Institute, Inc., New York City, New York, supports an HIV prevention project for injection drug users and their sexual partners across the border between Yunnan Province, China, and Lao Cai, Vietnam. The Swedish International Development Agency and the Ford Foundation are also contributing financial support to the project. NIDA supported the design of the HIV prevention intervention and its evaluation in FY 00, the project's 1<sup>st</sup> year. Researchers from Johns Hopkins University, Baltimore, are making site visits to candidate intervention villages and are working to complete the intervention and evaluation designs in collaboration with the in-country partners in Guangxi Province, China, and in Vietnam. They will document the process for developing and implementing cross-border and multinational HIV prevention projects and strategies to assist scientists seeking to start such collaborative projects. They also plan to build on findings from this effort to develop an expanded project. This study represents an important opportunity for research on coordinated programs that might reduce the spread of HIV across national borders in areas of the world in which the HIV epidemic is rapidly increasing among injection drug users.

Also during FY 00, a researcher at the University of California, Santa Cruz, was in the 4<sup>th</sup> year of a NIDA-funded extramural collaboration with independently funded researchers at the University of Bremen, Germany, and the University of Amsterdam, the Netherlands, to examine the course of marijuana use by persons in San Francisco, California, Bremen, and Amsterdam. The three studies are using comparable sampling strategies and data collection instruments. Results of comparative analyses are expected to contribute to understanding of the

influence of psychological sets in marijuana users, social settings of use, and sociocultural variables and differences in legal policy on patterns of marijuana use; effects as a “gateway” to use of other drugs; dependence on drugs; and a range of other adverse health and social consequences.

### **Activities With International and Multinational Organizations**

#### **World Health Organization**

NIDA serves as a WHO Collaborating Center on Drug Dependence. The two major joint efforts are research and information exchange.

NIDA and the WHO Department of Child and Adolescent Health and Development, with support from the U.S. Department of State, cosponsored a multinational meeting entitled *Street Children and Drug Abuse: Social and Health Consequences*, which was held on September 17–19, 2000, in Marina del Rey, California. The meeting assembled 37 representatives from 16 nations to enhance networks for communication and cooperation, examine science-based interventions from around the world, and set action priorities for a collaborative, cross-national, multidisciplinary research agenda that will promote the health and well-being of young people. The researchers and community-based organizers adopted recommendations calling for NIDA to serve as the central communications point for participants and for NIDA and WHO to cosponsor a working group to organize a follow-up meeting within 18 months, coordinate a special issue of a research journal, and assist countries in developing research agendas and best practices.

#### **Organization of American States Inter-American Drug Abuse Control Commission**

A NIDA-funded investigator at Johns Hopkins University, Baltimore, worked for a 4<sup>th</sup> year, in FY 00, in an extramural study with the Organization of American States Inter-American Drug Abuse Control Commission and investigators in Costa Rica, the Dominican Republic, El Salvador, Guatemala, Honduras, Nicaragua, and Panama to undertake a multisite, cross-sectional, school-based survey of teenage drug involvement in these seven countries. The project includes the use of standardized classroom survey

methods and will produce estimates of drug use by teenagers in each country, on the basis of a national probability sample survey. Results from the study will contribute to understanding of the characteristics of individuals, the conditions, and the processes that influence the occurrence of drug use, drug dependence, and other forms of serious drug involvement among youth.

#### **Global Research Network on HIV Prevention in Drug-Using Populations**

The 3<sup>rd</sup> Annual Meeting of the Global Research Network on HIV Prevention in Drug-Using Populations was held in Durban, South Africa, on July 5–7, 2000. The 12 cosponsoring organizations included the following: NIDA, the National Institutes of Health, the John E. Fogarty International Center for Advanced Study in the Health Sciences (FIC), the National Institutes of Health Office of AIDS Research, the Centers for Disease Control and Prevention, the U.S. Department of Health and Human Services’ Office of HIV/AIDS Policy, Health Canada, the Medical Research Council of South Africa, the National Department of Health of South Africa, the Joint United Nations Program on HIV/AIDS, the United Nations Office for Drug Control and Crime Prevention, and WHO. Approximately 80 researchers and health organization members attended the 2-day, closed meeting, and additional people attended on the 3<sup>rd</sup> and final day, which was open to the public. The meeting provided the following opportunities:

1. to continue the progress made over the past 2 years by advancing the science of HIV prevention to avert, slow, or stop the rate of spread in drug-using populations in diverse settings around the world;
2. to review emerging findings from quantitative and qualitative studies of HIV/AIDS prevention in injection and non-injection drug users;
3. to facilitate the global diffusion and application of empirically based principles on HIV prevention in drug-using populations;
4. to enhance opportunities for national, regional, and international collaborations in research on drug abuse and HIV/AIDS prevention, with a focus on Africa; and
5. to explore health conditions and consequences related to HIV/AIDS and drug abuse.

### **Extramural Programs**

#### **Grants**

During FY 00, NIDA supported 16 foreign grants and 10 grants with a foreign component. These grants are administered by the Division of Epidemiology, Services, and Prevention Research; the Division of Neuroscience and Behavioral Research; the Division of Treatment, Research, and Development; and the NIDA Center on AIDS and Other Medical Consequences of Drug Abuse.

#### **Contracts**

In FY 91, NIDA created the INVEST Program. The goals of the Program are as follows:

1. to foster collaboration within the international community of scientists engaged in research on drug abuse;
2. to expand the international network of researchers on drug abuse who are knowledgeable in the areas of science related to NIDA’s mission;
3. to broaden the dissemination of findings from NIDA’s drug abuse research to the international community; and
4. to provide scientific and technical consultation on drug abuse research to foreign investigators, ministries of health in other countries, and international organizations.

Activities supported through the NIDA INVEST Program expand international scientific knowledge about drug abuse while promoting development of rigorous scientific research. Through the Program, NIDA is building an international network of scientists capable of augmenting the research conducted and supported by the Institute.

#### **Interagency Agreements**

##### *AIDS International Training and Research Program*

Through an interagency agreement with FIC, NIDA provided \$500,000 in funding for projects under the AIDS International Training and Research Program. Participating NIDA grantees and collaborating countries include the following:

- University of California, Los Angeles—Cambodia, China, India, Mexico, Myanmar, and Vietnam;
- Columbia University, New York City, New York—Botswana, Namibia, and South Africa;
- Johns Hopkins University, Baltimore—Brazil, China, the Dominican Republic,

Ethiopia, Haiti, India, Malawi, Malaysia, South Africa, Thailand, and Uganda;

- University of Maryland, Baltimore—Barbados, Brazil, Jamaica, and Trinidad and Tobago;

- State University of New York, Brooklyn—Armenia, the Czech Republic, Estonia, Georgia, Hungary, Latvia, Poland, and Russia; and

- Yale University, New Haven, Connecticut—Russia.

#### *HIV Prevention Trials Network*

Through an interagency commitment, NIDA provided \$2 million during FY 00 to support domestic and international research through programs of the HIV Prevention Trials Network. NIDA funding for this network will increase to \$4 million in FY 01.

#### *U.S.-Russia Binational Awards for Innovative Efforts for Prevention of Drug Abuse and HIV*

In FY 00, five teams of NIDA grantees and Russian scientists received competitive design awards to provide technical assistance, materials, and limited direct funding for innovative efforts to prevent drug abuse and HIV transmission in Russia. A binational committee of expert reviewers selected the awardees from submissions by participants in the U.S.-Russia Binational Workshop: Drug Abuse and Infectious Disease Prevention Strategies, in St. Petersburg, on May 24–27, 1999. The meeting was organized by NIDA and Pavlov Medical University, St. Petersburg, with support from the U.S. Department of State.

#### **International Meetings**

During FY 00, NIDA supported several research workshops and conferences in collaboration with other countries and international organizations.

The U.S.-Netherlands Addiction Workshop and the Binational Symposium on Drug Abuse, Addiction Research, and Innovation were held in Amsterdam, on October 19–20, 1999. NIDA, the Netherlands Organization for Scientific Research, and the Netherlands Health Research and Development Council organized the meeting. Two NIDA staff members and seven extramural researchers presented plenary speeches and conducted workshops on a variety of prevention- and treatment-oriented topics. At

the symposium, NIDA signed an Exchange of Letters with the two Netherlands research organizations, agreeing to promote scientific collaboration and exchange in the fields of biomedical and behavioral research related to drug abuse.

NIDA participated in the biannual meetings of the South African Community Epidemiology Network on Drug Use, in Durban and Johannesburg, in October 1999.

A NIDA staff member cochaired the East and South Asian Multi-City Epidemiology Work Group, in Penang, Malaysia, in November 1999. The work group is a network for epidemiologic surveillance of drug abuse. It is composed of researchers throughout the Asian region, including Bangladesh, Cambodia, China, India, Japan, Laos, Malaysia, Myanmar, Pakistan, Papua New Guinea, the Philippines, Sri Lanka, Thailand, Vietnam, and Taiwan.

NIDA and the Hungarian Ministry of Youth and Sports cosponsored the United States-Eastern Europe Regional Meeting on Methamphetamine and Ecstasy Research, in Visegrád, on March 31–April 2, 2000. The meeting was planned by an international organizing committee that was cochaired by representatives from NIDA, the Hungarian Academy of Sciences, and Semmelweis University, Budapest. Two NIDA staff members and five NIDA grantees joined drug abuse researchers from the United Nations International Drug Control Program, the European Union, and nine Eastern European countries (Bulgaria, the Czech Republic, Estonia, Hungary, Latvia, Poland, Romania, Slovakia, and Slovenia) to share knowledge about how these drugs act on the brain, how they produce their behavioral effects, and strategies for prevention and treatment.

NIDA sponsored a preconference on May 30, 2000, as part of the 3<sup>rd</sup> United States-Mexico Binational Drug Demand Reduction Conference. The purposes of the meeting were to focus on the recommendations of the research work groups from the two previous conferences and to define potential collaborative research projects. NIDA grantees and staff were among the Mexican and U.S. scientists who participated in the research information sessions and work groups on epidemiology and prevention, drug abuse treatment, and basic science.

NIDA convened the meeting on Building International Research on Drug Abuse: Drug Abuse Treatment in the New Millennium, in San Juan, Puerto Rico, on June 15–17, 2000. At this conference, more than 50 scientists from 17 countries met to discuss international collaborative projects and advances in basic science, epidemiology and prevention, and pharmacological and behavioral treatment research. NIDA staff and grantees were among the 20 scientists who made oral presentations; 18 additional scientists presented research posters. The international organizing committee was chaired by a NIDA staff member and included scientists from Colombia, Costa Rica, and India.

The 62<sup>nd</sup> Annual Scientific Meeting of the College on Problems of Drug Dependence was held in San Juan, Puerto Rico, on June 17–22, 2000, and was partially supported by a grant from NIDA.

NIDA, the Howard University Center for Drug Abuse Research, Washington, D.C., the South African Department of Corrections, and the Medical Research Council of South Africa cosponsored the meeting entitled Substance Abuse, Crime, Violence, and HIV/AIDS As Consequences of Poverty: Prevention, Intervention, and Treatment in the United States and South Africa, which was held in Durban, on July 1–5, 2000. Leading black researchers and practitioners from the two nations presented relevant research and discussed strategies to address common problems of poverty and its consequences. Five NIDA staff members joined NIDA grantees and South African officials, academicians, and health experts in giving presentations at the meeting.

#### **Intramural Programs and Activities**

NIDA's Intramural Research Program is located at the Addiction Research Center, Baltimore, Maryland. During FY 00, the Intramural Research Program hosted 28 Visiting Fellows, 7 Guest Researchers, 6 Special Volunteers, and 6 Research Fellows. These visitors were from the following countries: Australia, Belarus, Belgium, China, the Czech Republic, Denmark, France, India, Israel, Italy, Japan, the Netherlands, Poland, Russia, Singapore, Spain, Sweden, the United Kingdom, and Taiwan.

## **Fellowships**

NIDA supports two international fellowships to offer professional research development opportunities to international scientists: the INVEST Research Fellowship and the Hubert H. Humphrey Drug Abuse Research Fellowship. To support NIDA's vision for cooperation in international research, it is important to develop an international cohort of scientists who are knowledgeable about NIDA's research and are trained in accepted methods and current technology.

### *INVEST Research Fellowship*

NIDA's INVEST Research Fellowship enables postdoctoral researchers to work with established scientists engaged in research on drug abuse at a U.S. institution. Each non-U.S. scientist receives research training and participates in professional development activities with a NIDA-funded grantee for 1 year. The 1999–2000 INVEST Research Fellows were from Australia, Egypt, and Spain.

### *Hubert H. Humphrey Drug Abuse Research Fellowship*

In cooperation with the Department of State, Johns Hopkins University, Baltimore, and the Institute for International Education, Washington, D.C., NIDA sponsors a unique component of the Hubert H. Humphrey Drug Abuse Research Fellowship Program. This fellowship enhances the work of mid-career professionals in drug abuse from eligible countries, by contributing to their understanding of the scientific basis of drug abuse and addiction. Fellows learn about NIDA-supported drug abuse research and the application of research to the development of prevention programs, treatment protocols, and government policies. In addition to academic studies and seminars on research advances, the Fellows are exposed to state-of-the-science research methods during a 6-week professional affiliation with a NIDA grantee. Former Fellows and their U.S. mentors form the nucleus of a network of scientists who exchange infor-

mation and collaborate on drug abuse research nationally, regionally, and globally. The Hubert H. Humphrey Drug Abuse Research Fellows funded by NIDA in 1999–2000 were from Russia, Ukraine, and Venezuela.

## **Distinguished International Scientist Collaboration Program Awards**

NIDA announced the Distinguished International Scientist Collaboration Program Awards in mid-FY 00. Prompted by suggestions from NIDA grantees and staff, who noted that exchange visits among experienced scientists from different countries can stimulate development of innovative research and techniques, these awards were designed to foster international collaborative research on drug abuse and drug-related consequences. The awards will support 1- to 3-month professional visits to the United States by experienced drug abuse researchers from any other country. The first awards will be made in early FY 01.